

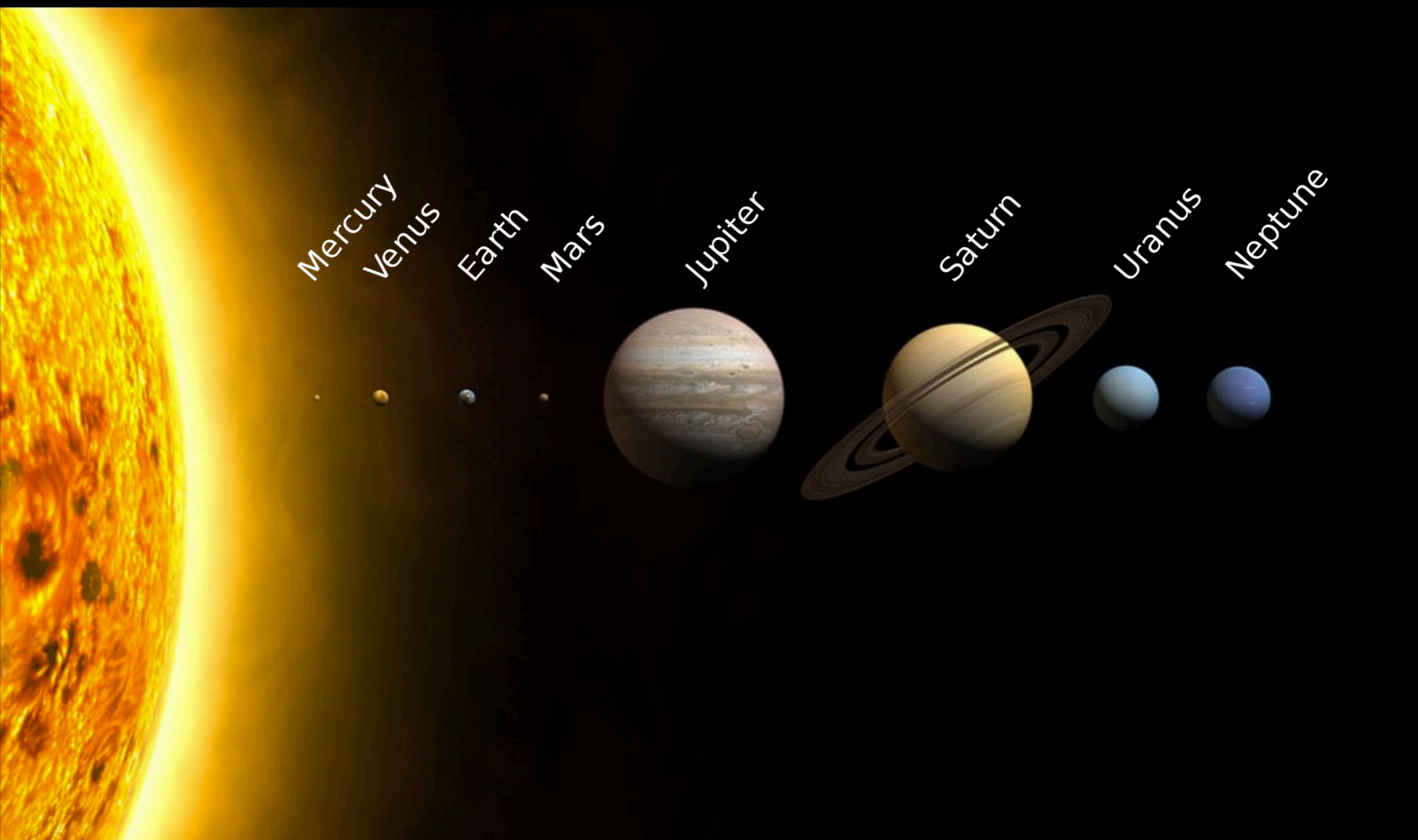
Winks and Wobbles

Exoplanets, how to find them, and what they're like

Dr David Brown
The University of Warwick



What?



Mercury

Venus

Earth

Mars

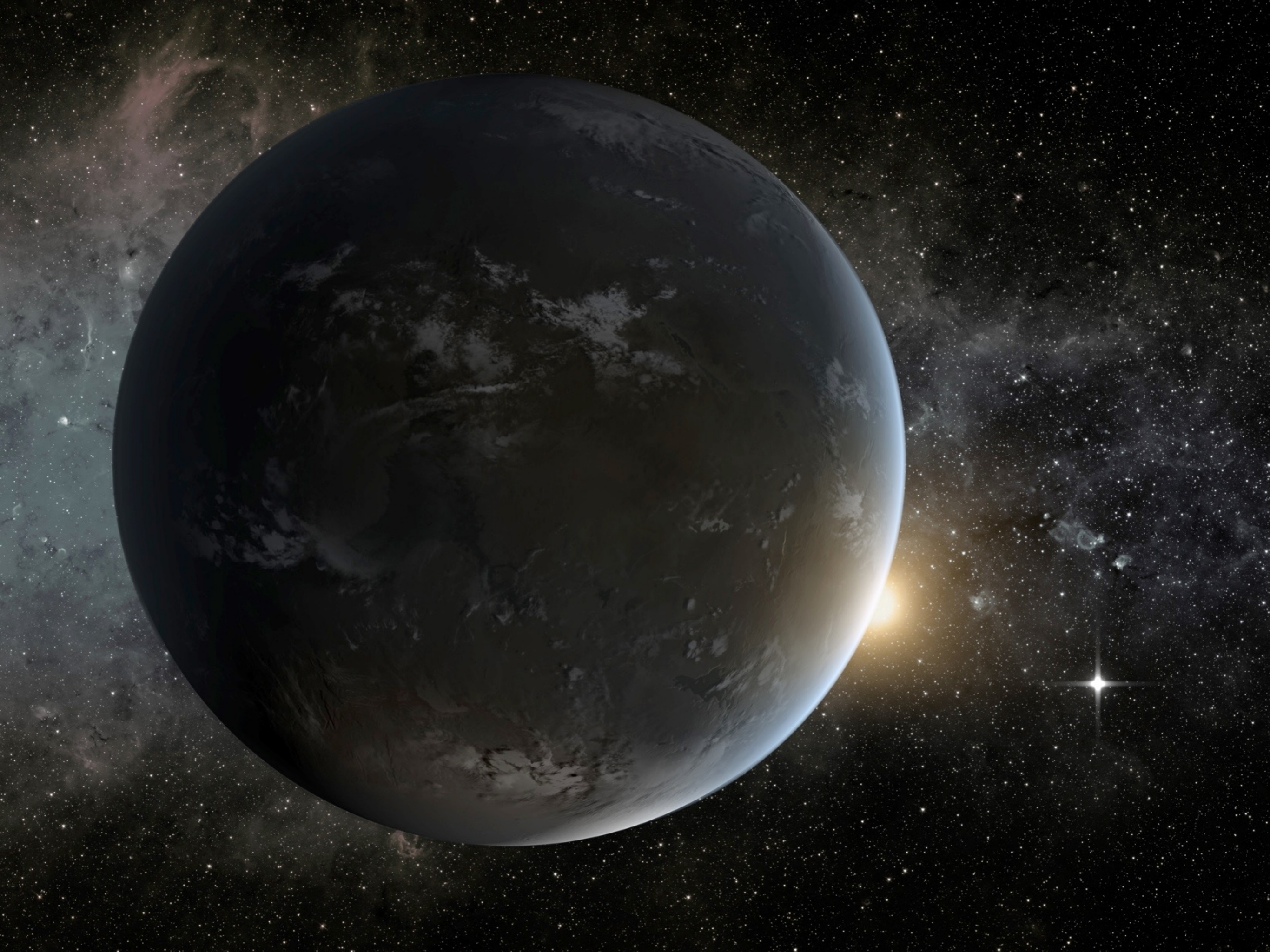
Jupiter

Saturn

Uranus

Neptune









How?



Winks

Wobbles



Winks

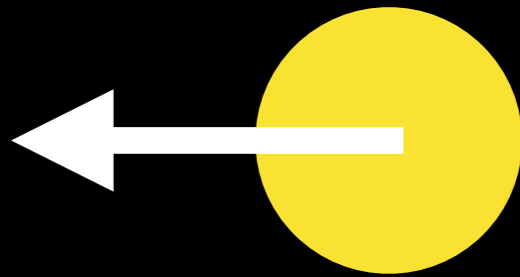
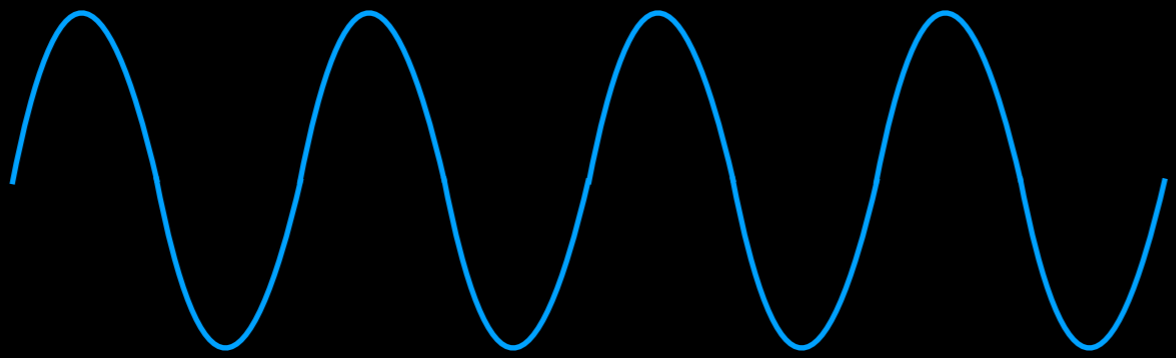
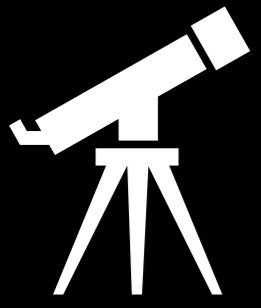
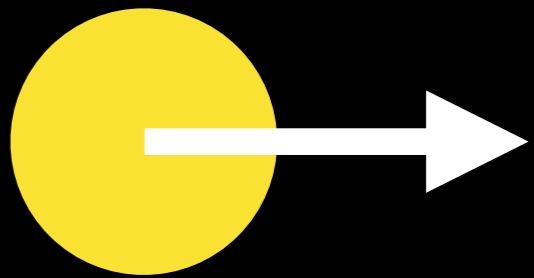
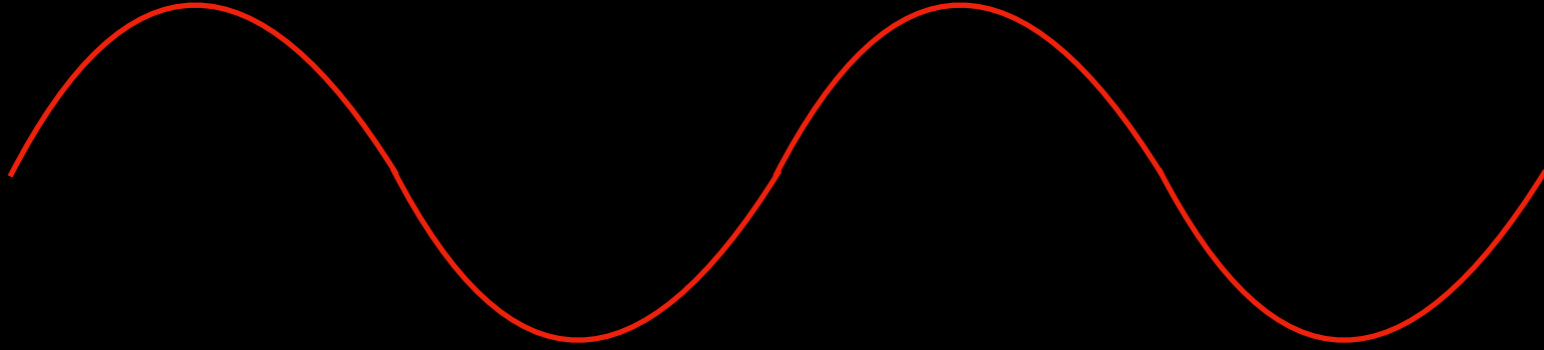
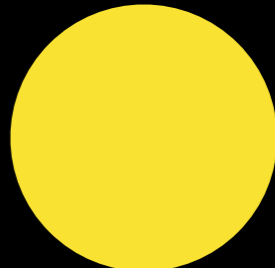
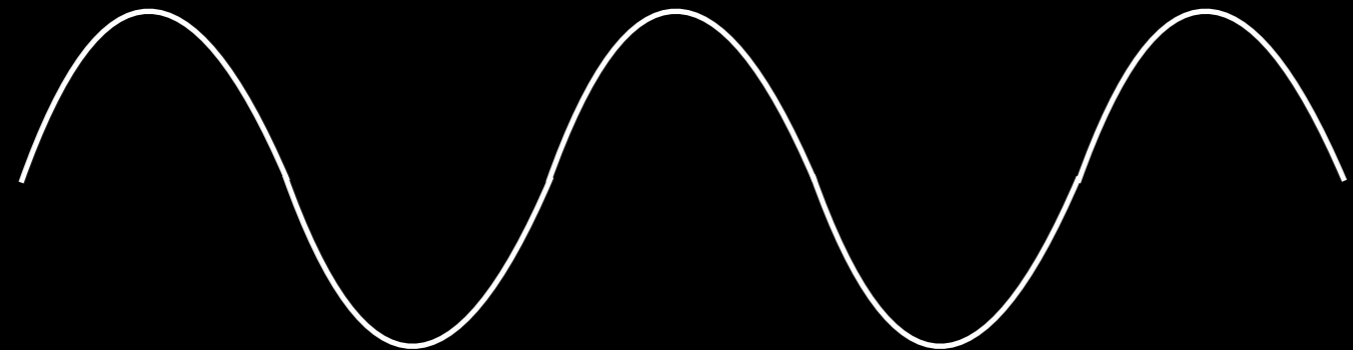
Transit method

Wobbles

Radial velocity method

Demonstration time!

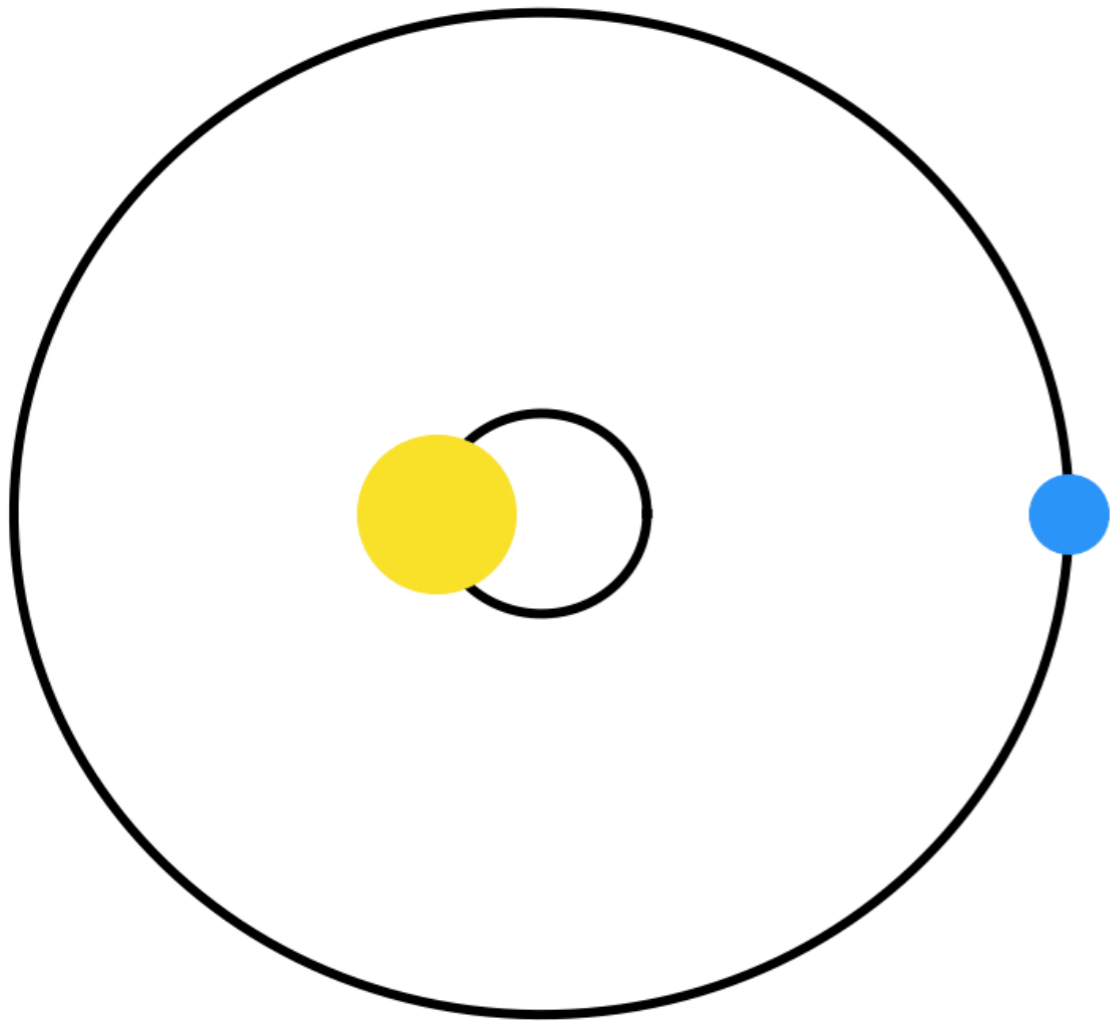
Light also Doppler shifts...



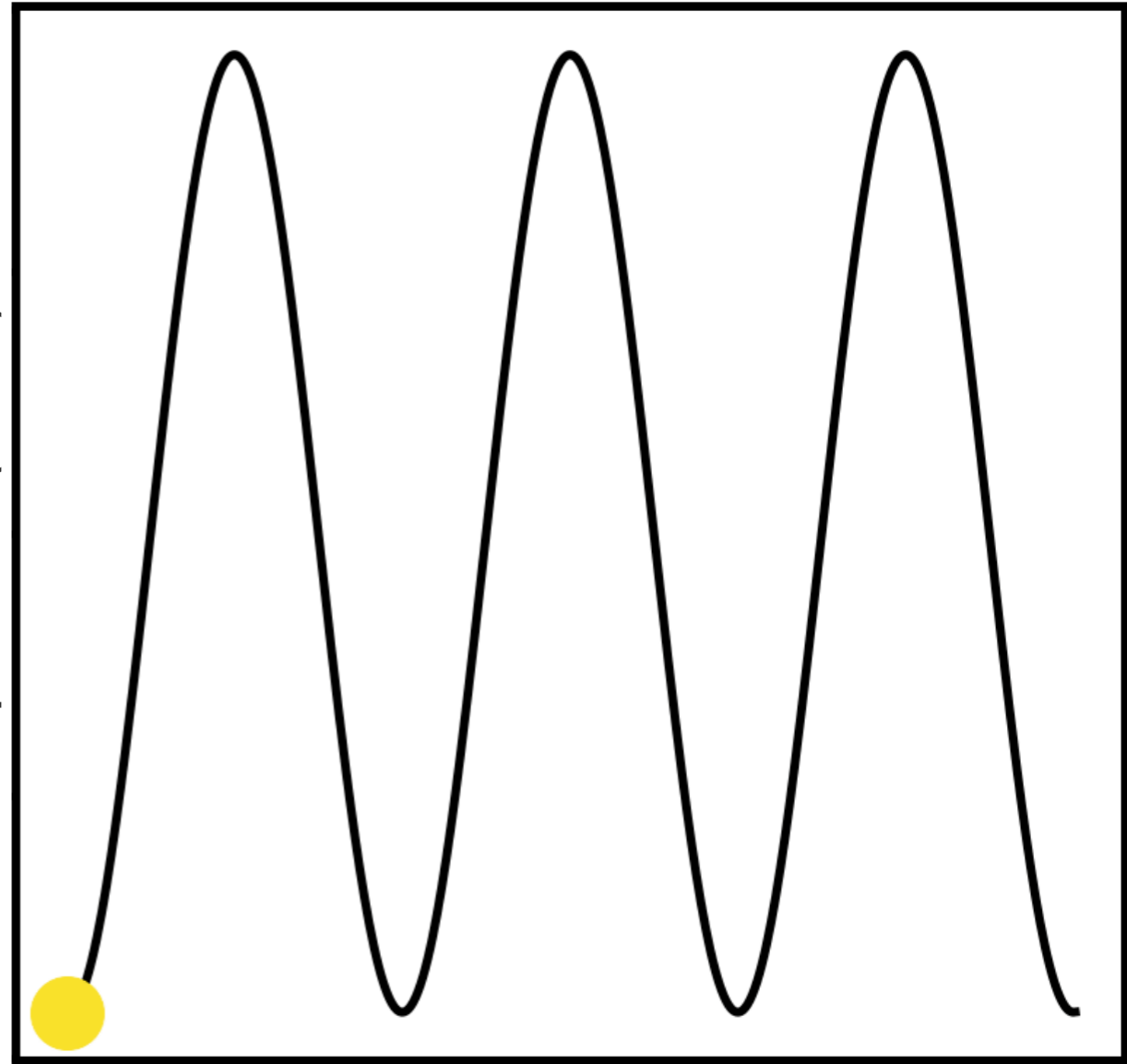
Your turn to explore

[www.warwick.ac.uk/fac/sci/physics/research/astro/people/
dbrown/transitworkshop](http://www.warwick.ac.uk/fac/sci/physics/research/astro/people/dbrown/transitworkshop)

Demonstration time!



Speed (m/s)

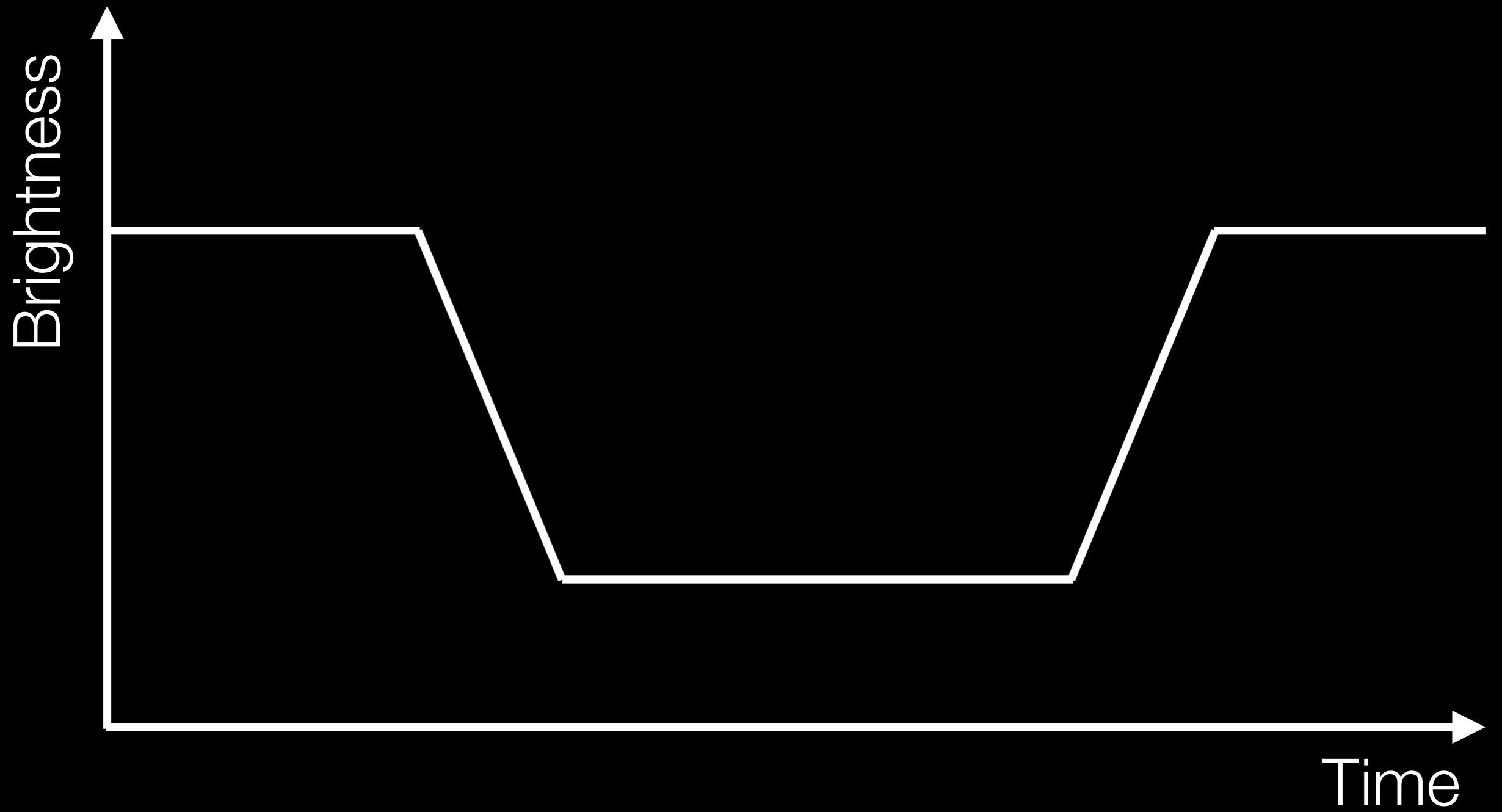
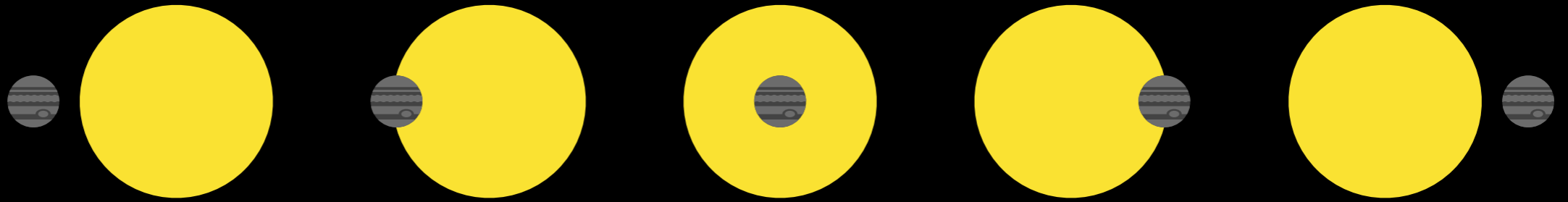


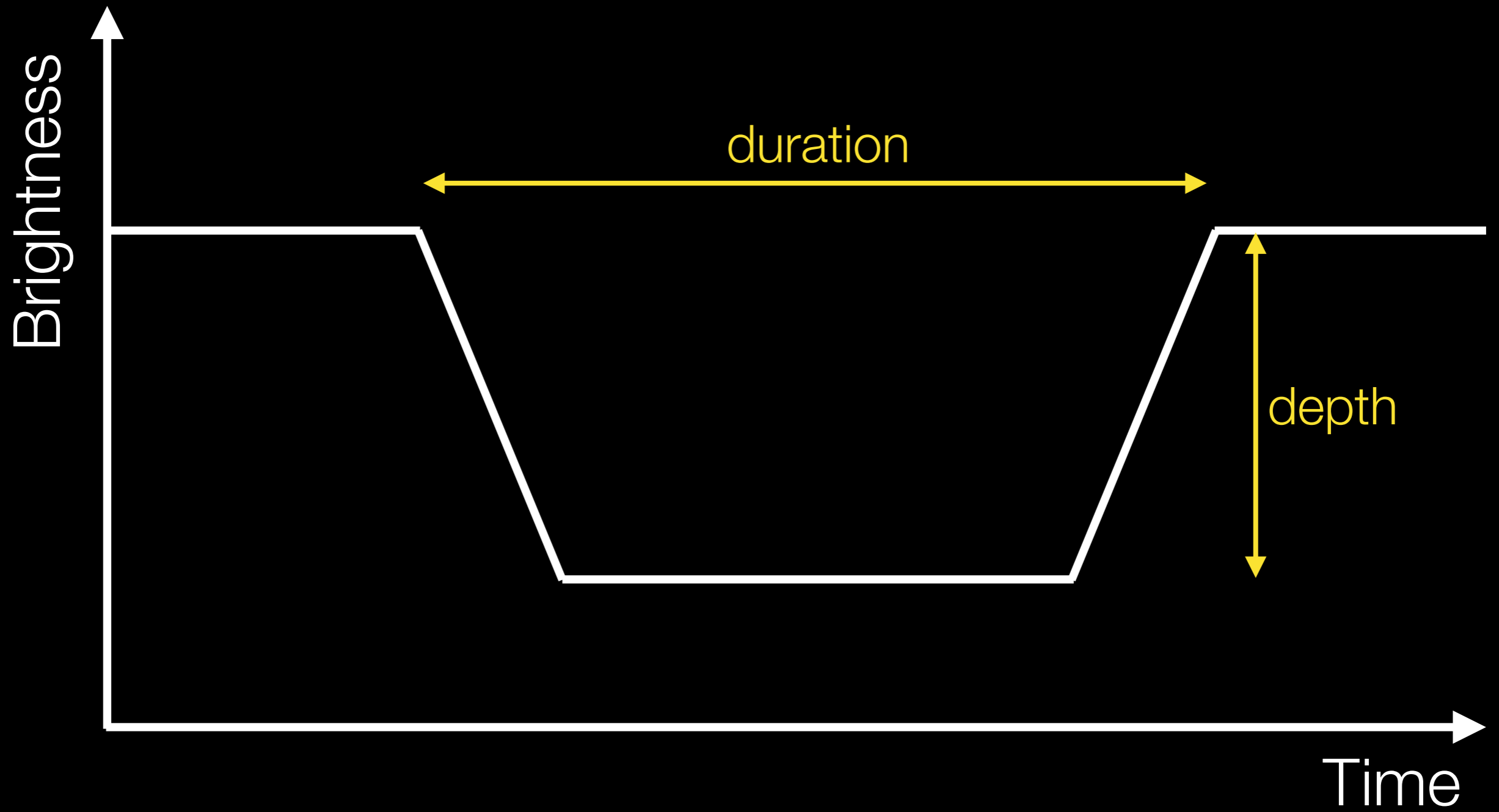
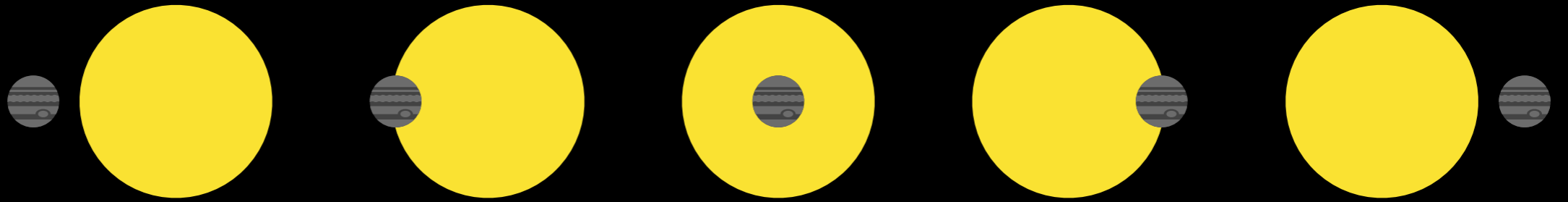
Radial velocities

Your turn to explore

[www.warwick.ac.uk/fac/sci/physics/research/astro/people/
dbrown/transitworkshop](http://www.warwick.ac.uk/fac/sci/physics/research/astro/people/dbrown/transitworkshop)

Demonstration time!





Demonstration time!

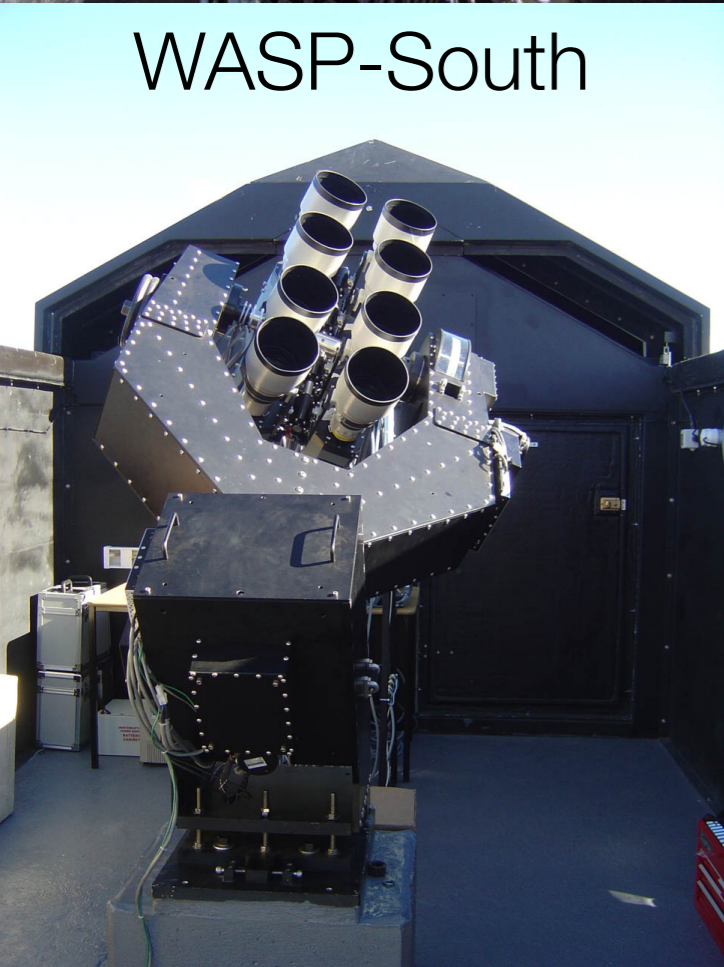
Your turn to explore

[www.warwick.ac.uk/fac/sci/physics/research/astro/people/
dbrown/transitworkshop](http://www.warwick.ac.uk/fac/sci/physics/research/astro/people/dbrown/transitworkshop)

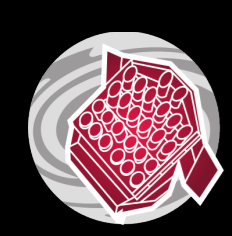


Who?

SuperWASP-North



Wide Angle Search for Planets (WASP)



PLATO





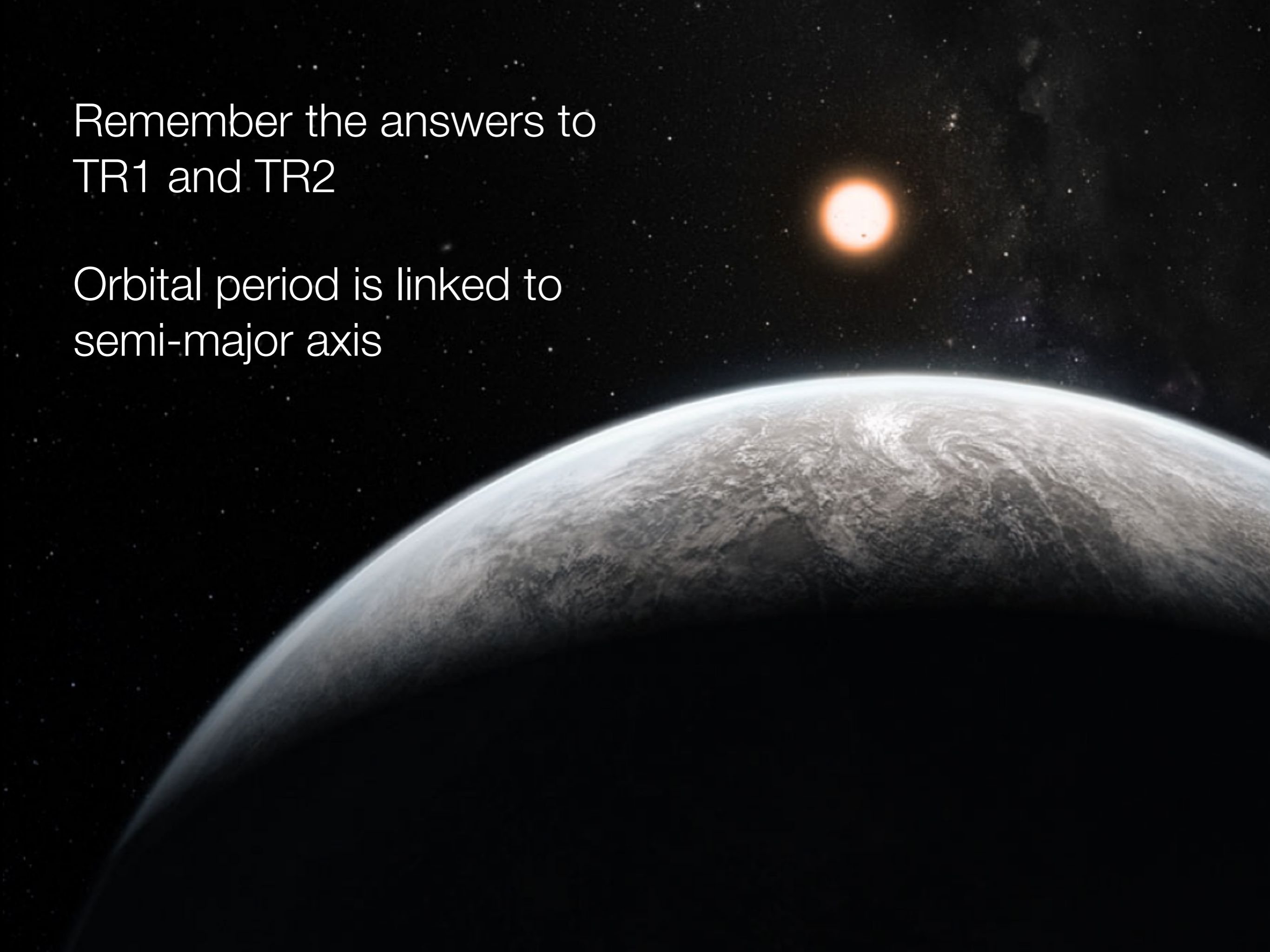
YOU!

Your turn to investigate

[www.warwick.ac.uk/fac/sci/physics/research/astro/people/
dbrown/transitworkshop](http://www.warwick.ac.uk/fac/sci/physics/research/astro/people/dbrown/transitworkshop)

Remember the answers to
TR1 and TR2

Orbital period is linked to
semi-major axis



a) system8

b) system9

c) system2

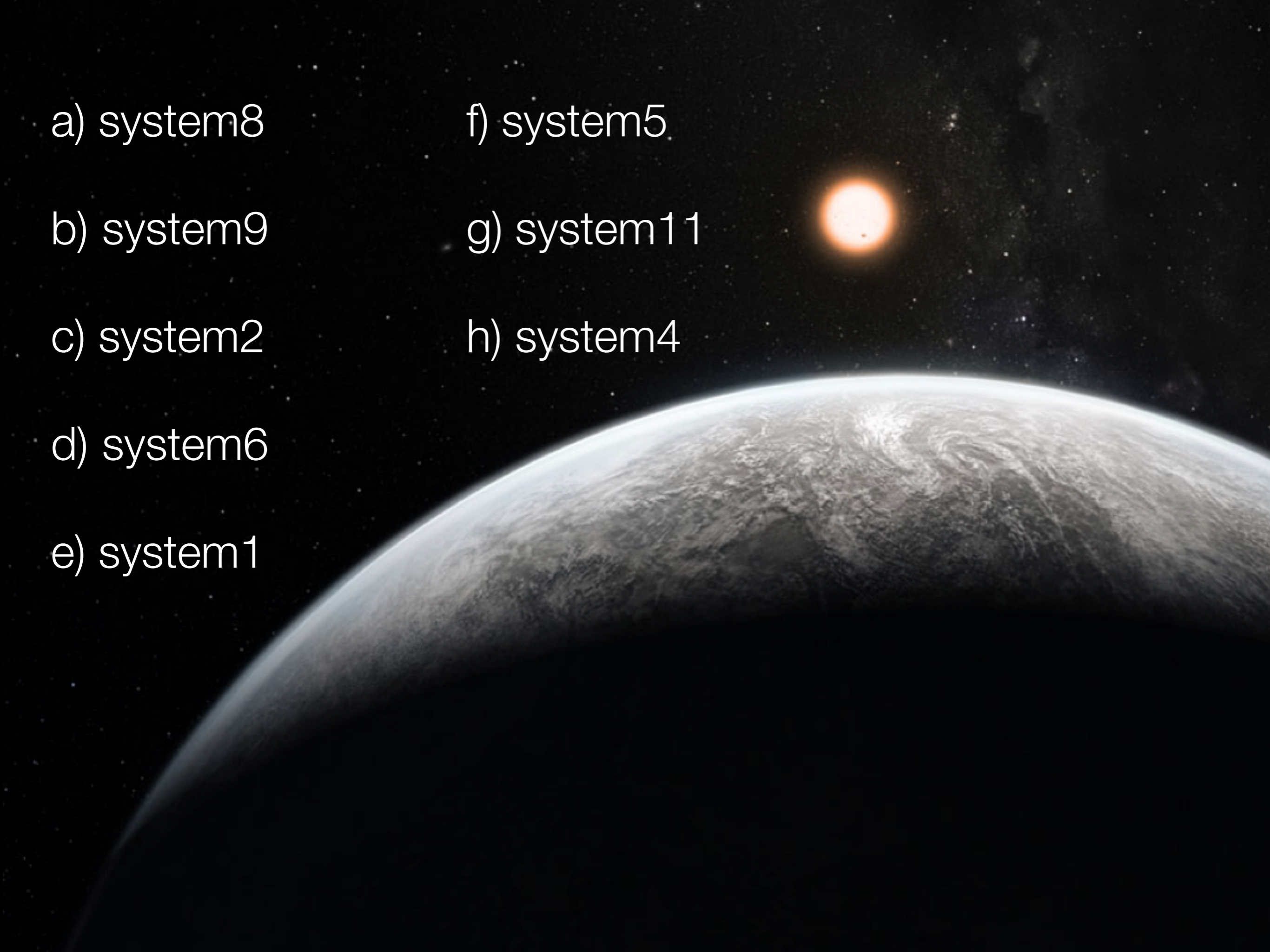
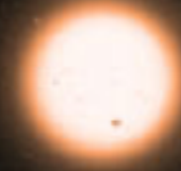
d) system6

e) system1

f) system5

g) system11

h) system4



a) system8

b) system9

c) system2

d) system6

e) system1

f) system5

g) system11

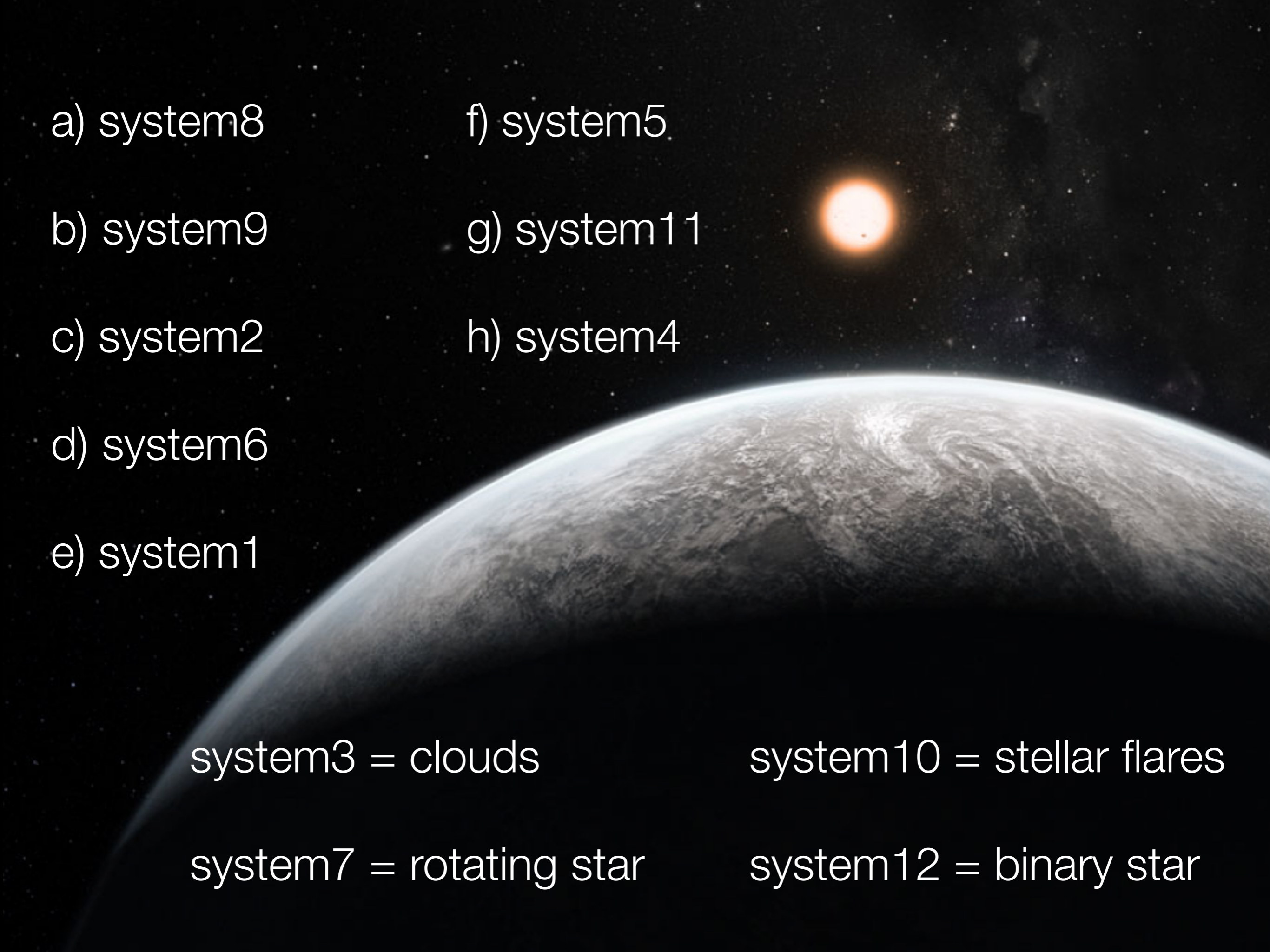
h) system4

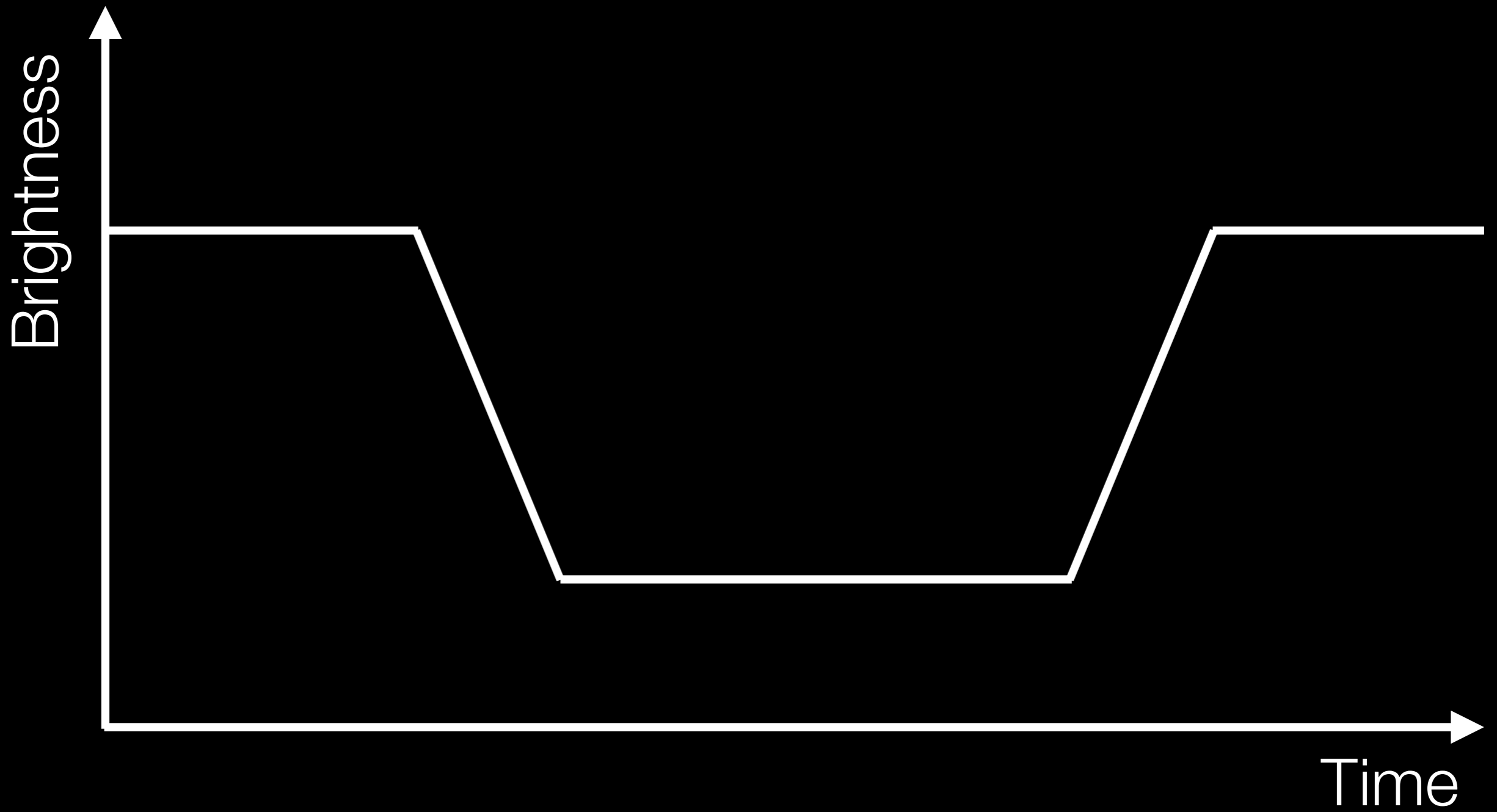
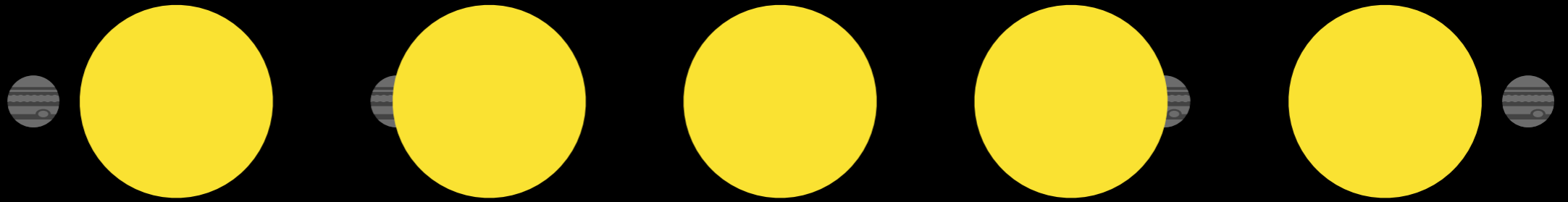
system3 = clouds

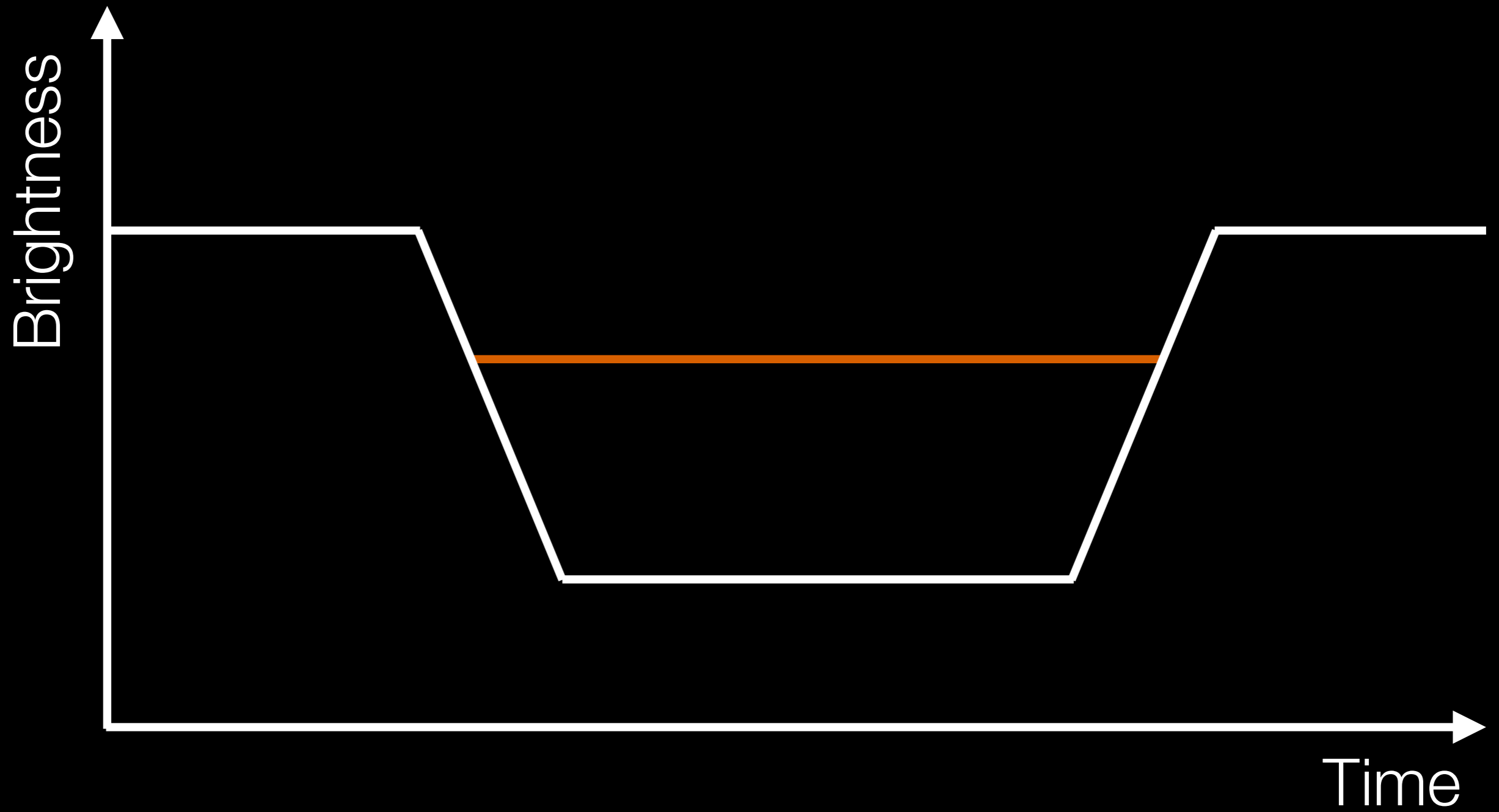
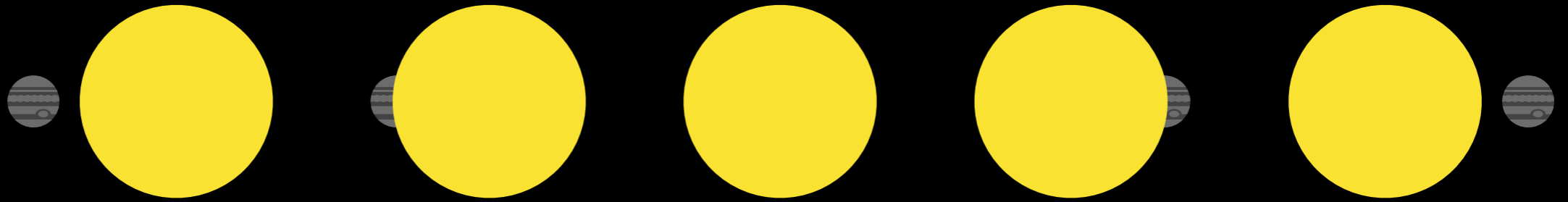
system7 = rotating star

system10 = stellar flares

system12 = binary star







What exoplanets are

How you find them

Wobbles - radial velocities

Winks - transits

How the type of planet changes the signal you see

Things that cause transits but aren't planets

[www.warwick.ac.uk/fac/sci/physics/research/astro/people/
dbrown/transitworkshop](http://www.warwick.ac.uk/fac/sci/physics/research/astro/people/dbrown/transitworkshop)